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10/663,807	09/17/2003	Eiji Hayashi	Q77558	4057
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



## DETAILED ACTION

### *Claim Objections*

1. Claim 11 is objected to because of the following informalities: Page 5, line 1 recites "...the ball scooping is inserted...", which appears to be a typographical error of -...the ball scooping **portion** is inserted...--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 7, 8, 9, 11-13, 15, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Conant 2,882,742.

Conant discloses:

- a screw shaft (10) including a spiral-shaped ball rolling groove (11) formed in an outer peripheral surface thereof;
- a nut (12) including a spiral-shaped ball rolling groove (13) formed in an inner peripheral surface thereof;
- a plurality of balls (16) disposed in a ball rolling passage formed by the two ball rolling grooves;
- a ball circulation tube (17) forming a ball circulation passage and including a ball scooping portion in an end portion thereof,

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- a tube guide insertion hole is formed on the nut at a position where the ball scooping portion is inserted (see figure 6),
- a tube guide (35) via which the ball circulation tube is mounted onto the nut.
- the tube guide (35) comprising: a top surface; a bottom surface; and a side surface connecting the top surface and the bottom surface (see figure 6),
- wherein a scooping portion insertion hole is formed so as to penetrate from the top surface to the bottom surface (see figure 6),
- the ball scooping portion is inserted into the scooping portion insertion hole (see figure 6),
- a tube guide insertion hole is formed on the nut at a position where the ball scooping is inserted.
- the side surface has a shape matched to an inner shape of a tube guide insertion hole (see figure 6),
- the scooping portion insertion hole has an inner shape matched to an outer shape of the ball scooping portion (see figure 6).
- wherein the side surface is formed in a cylindrical shape (see figure 6)
- wherein an axial line of the cylindrical shape is set perpendicular to an axial line of the nut (see figure 6)

- wherein the tube guide is made of elastic material (because all materials have a modulus of elasticity, the tube guide is made of an elastic material).
- wherein the tube guide is interposed between the ball scooping portion and the tube guide insertion hole without any clearance between the ball scooping portion and the tube guide insertion hole (see figure 6).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 4-6, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conant 2,882,742 in view of Ebina et al. US 6,089,117.

Conant discloses all of the claimed subject matter as described above. Conant does not disclose wherein the scooping portion insertion hole has a ball circulation passage scooping angle set so as to correspond to the a lead angle of the ball screw.

Ebina et al. teach wherein the scooping portion insertion hole has a ball circulation passage scooping angle set so as to correspond to the a lead angle of a ball screw (see figure 8) for the purpose of achieving smooth circulation of balls (C16/L45-60).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Conant and provide wherein the scooping

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portion insertion hole has a ball circulation passage scooping angle set so as to correspond to the a lead angle of a ball screw, as taught by Ebina et al., for the purpose of achieving smooth circulation of balls.

Conant further discloses:

- wherein the tube guide is made of elastic material (because all materials have a modulus of elasticity, the tube guide is made of an elastic material).

4. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conant 2,882,742 in view of Rohlinger US 5,373,755.

Conant discloses all of the claimed subject matter as described above. Conant does not disclose a chamfered top surface.

Rohlinger teaches a chamfered top surface (see figures 4 and 6 @ 41) for the purpose of closely supporting a circulation tube while allowing for a radius to smoothly guide balls (C6/L55-65), thus avoiding an abrupt change in ball direction and improving operational efficiency.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Conant and provide a chamfered top surface, as taught by Rohlinger, for the purpose of closely supporting a circulation tube while allowing for a radius to smoothly guide balls, thus avoiding an abrupt change in ball direction and improving operational efficiency.

***Response to Arguments***

5. Applicant's arguments with respect to claims 1-15, and 28-31 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terence Boes whose telephone number is (571) 272-4898. The examiner can normally be reached on Monday - Friday 9:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

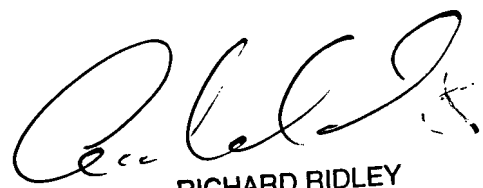
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6/1/07



RICHARD RIDLEY  
SUPERVISORY PATENT EXAMINER